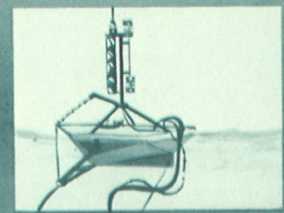
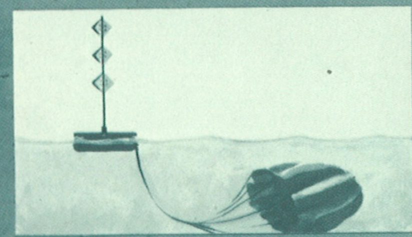
On-Station Capability

Nansen bottles are used to obtain water samples at various depths. The bottles are free flooding until tripped by a messenger weight, when they reverse and remain filled with water from the assigned depth. Each bottle carries thermometers which read temperature at the sample depth. Nansen bottles are stored in the wet lab, and tapped for dry lab analysis of salinity, dissolved oxygen, and other parameters.

SCUBA divers are the best instruments for direct observation of the oceanic environment. Divers and special equipment enter and leave the ship through a center well opening in the oceanographic laboratory.



Current meters suspended from a ship launched buoy measure the direction and speed of ocean currents at various depths, and radio this information to shipboard recorders. Sensors for temperature, salinity, and pressure (depth) can also be used with this equipment.



Drogue buoys, deployed by the ship and tracked by radar, measure current flow at depth.

Stereocameras are lowered to obtain a photographic record of small sections of the ocean floor. The stereo pair is used in photogrammetric mapping, an important part of the search for new resources in the sea.

Samples of ocean floor sediments are collected for analysis, and are used in determinations of the character, age, and origin of the ocean basins and continents.

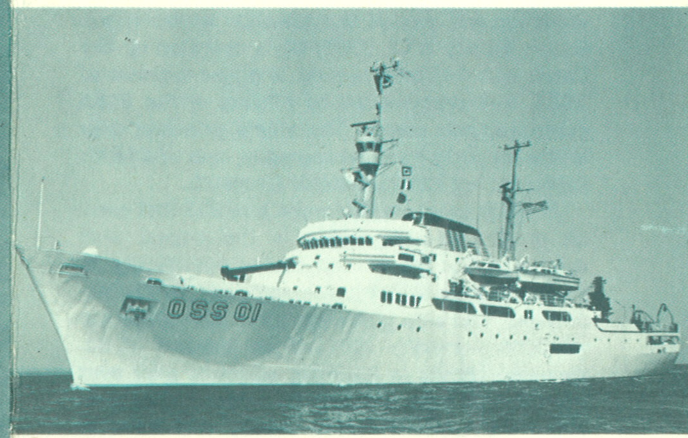
Grabs take a "bite" from the exposed sediment layer.

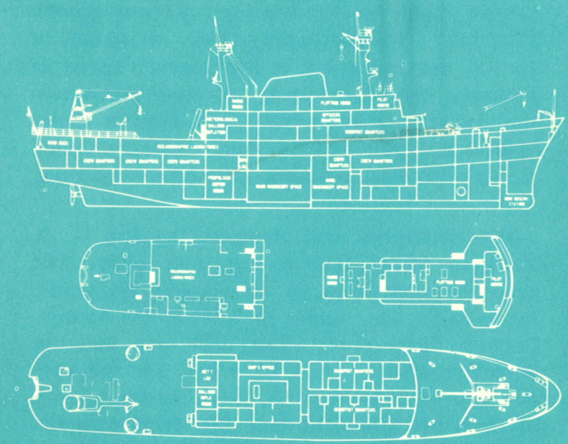
Long cores are obtained with tubular devices which are driven into the sediment layers. When brought aboard ship, the core samples are removed intact as cylindrical specimens showing the vertical composition of the ocean bottom. Core sizes of this type range to more than 100 feet in length, and have been collected even in the deepest ocean trenches.

Thermoprobes are driven into the ocean floor to read temperatures at various vertical positions in the sediment layer. These measurements are used to determine the flow of heat from the earth into the ocean, providing clues to the seismic and structural character of the earth beneath the ocean floor.

Geological dredges are towed along the ocean floor to gather samples of rocks and sediments. Significant manganese deposits have been discovered by these dredging operations.

USC&GSS OCEANOGRAPHER
OSS 01





U.S. DEPARTMENT OF COMMERCE
Environmental Science Services Administration

the USC&GSS
OCEANOGRAPHER

is one of a fleet of research and survey vessels used by the Environmental Science Services Administration (ESSA) to improve man's understanding and use of the physical environment. Ocean Survey Ship (OSS) 01 is operated by the Coast and Geodetic Survey, a major element of ESSA, and commanded by officers of the ESSA commissioned corps. The ship's principal user is the Institute for Oceanography, one of ESSA's Institutes for Environmental Research.

At 3800 tons' displacement and 303-feet overall length, **Oceanographer** is the largest ship ever built by the United States specifically to conduct oceanographic research and survey operations. The ship combines a full environmental research capability with unique features of design—versatility in handling scientific gear over the side; an extensive use of automated control and data systems; radio, radar, and satellite navigation equipment; a research-oriented arrangement of living quarters, laboratories, and oceanographic work areas; and planned growth capability. **Oceanographer** has a range of 13,000 nautical miles at a sustained speed of 16 knots, and carries up to 150 days' provisions. Her ice-strengthened steel hull permits polar operations, and she is fully air-conditioned for comfort and efficiency in warmer latitudes.

Oceanographer was designed by the U. S. Maritime Administration and built under that agency's supervision by Jacksonville Shipyards, Jacksonville, Fla., under contract to the Aerojet-General Corporation. The keel was laid for **Oceanographer** on July 22, 1963, and the ship was launched on April 19, 1964. In the interim between her launching and July 1966 commissioning, **Oceanographer** was outfitted with specialized equipment and taken to sea to prove her readiness for service.

Underway Research and Survey Capability